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Gesellschaft mit beschränkter Haftung

Component for sound insulation and heat insulation

The invention relates to a component for sound insulation and heat insulation of vehicle interiors, in particular of aircraft.

A multiplicity of arrangements are already known for sound insulation and heat insulation of vehicle interiors. In this case, in the case of vehicles, the internal trim, in particular, is designed for sound insulation and heat insulation. In this case, the weight conditions must be taken into account, in particular, in the design for aircraft.

In the case of aircraft, it is known for the space between the frames to be clad by insulation cushions, which are formed with fine fibre glass wool, and for the individual cushions to be connected to the frames by lashing cords. In order to improve poor sealing of the insulation cushions to the frames, additional windings around the frames are provided, with correspondingly designed insulation cushions. The space which is filled by the insulation cushions is then covered with a fixed internal wall, as a result of which the sound insulation and heat insulation are provided by the vehicle outer wall, the lashed insulation cushions and the inner wall.

This known arrangement has the defect that the sound-insulating sealing is not ensured as a result of the free spaces between the individual insulation cushions and, for example, the frames. Furthermore, it is highly complex to attach the individual insulation cushions

between the frames, and this has a disadvantageous effect on the time required for removal and installation during maintenance work. Furthermore, the known insulation cushions are susceptible to damage which can be caused, in particular, by the sharp edges of the surrounding stringers and frames.

The object of the invention is to overcome the abovementioned defects and to provide a component for adequate sound insulation and heat insulation with a low weight per unit area, in particular for aircraft, which allows simple manufacture and fast installation and removal.

According to the invention, the object is achieved in that the component is formed from a frame composed of sound-insulating and heat-insulating material with skin on the outside, and the frame has at least one contact and holding surface for an intermediate wall, which is located on the same plane as it, in order to form separate holding areas for absorption and insulation means.

A component designed in this way provides effective sound insulation and heat insulation, which is relatively insensitive and allows rapid fitting. Furthermore, the frame makes it possible to ensure good insulation in the abutting zones between the individual components and between a component and a vehicle part, for example a frame.

In order to provide a contact and holding surface for an intermediate wall with little complexity, and furthermore to allow a good termination to the frames on the outside of the frame, it is proposed that the frame be composed of a z-shaped profile.

In order to match the sound insulation to the individual fields of application, the component is designed such that different absorption and insulation means are provided in its separate holding areas.

In order to allow a low weight per unit area and economic design of the component, a further refinement of the invention provides that the skin, which points towards the interior, of the frame is in the form of a fixed panel, and a film is used as the external skin. In consequence, that side of the component which faces the vehicle interior is durable, while the film, which is not accessible in the installed state, together with the insulation adequately carries out the holding function.

One exemplary embodiment of the component according to the invention is illustrated in the drawing, in which:

Figure 1 shows a schematic illustration of a component,

Figure 2 shows a section through an abutment point of the internal trim, and

Figure 3 shows a perspective illustration of an abutment point of the internal trim.

The illustrated component is formed from a frame 1 with a skin on one side formed by a panel 2, while the other outer face is closed by a film 3. On installation, the panel 2, which has resistance, faces the vehicle interior and the film 3 faces the vehicle outer wall 4.

In order to provide so-called multishell insulation with the individual shells connected with vibration oscillation between them, the frame has a contact and holding surface 5 for an intermediate wall 6. In this

exemplary embodiment, the contact and holding surface 5 comprises a web 7, which is formed by a z-shaped profile of the frame 1. The further web 8 of the frame profile is used for closure with the vehicle frames 9, in order to prevent a direct air connection. The web 8 in this case makes it possible for the component to engage in frame profiles. The intermediate wall 6 creates separate areas 10 and 11 for holding absorption and insulation means. In the present exemplary embodiment, different absorption and insulation means are in this case provided in the holding spaces 10 and 11.

The material for the frame 1 is composed, for example, of polyester foam. The panel 2, which is used as the internal trim, and the intermediate wall 6 are advantageously composed of a glass-fibre-reinforced plastic, while the film 3 is composed of a plastic. The absorption and insulation means in the holding area 10 is composed of an asbestos foam, and the holding area 11 is filled with superfine fibre-glass wool.

The panel 2, the intermediate wall and the film 3 are attached to the frame by an adhesive, and overall form a closed component.

The abutment points between two installed components according to the invention are shown in Figures 2 and 3. The individual components are in this case attached in a known manner to the frame, by means of oscillating elements 12.

The number of contact and holding surfaces in the frame 4 can, of course, be increased in such a way that a plurality of holding areas for absorption and insulation means are formed by appropriately associated intermediate walls, in order to provide better insulation.

Patent Claims

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1. Component for sound and heat insulation of vehicle interiors, in particular of aircraft, characterized in that the component is formed from a frame (1) composed of sound-insulating and heat-insulating material with skin (2 and 3) on the outside, and the frame (1) has at least one contact and holding surface (5) for an intermediate wall (6), which is located on the same plane as it, in order to form separate holding areas (10 and 11) for absorption and insulation means.

2. Component according to Claim 1, characterized in that the frame (1) comprises a z-shaped profile.

3. Component according to Claims 1 and 2, characterized in that different absorption and insulation means are provided in its separate holding areas (10 and 11).

4. Component according to Claims 1 to 3, characterized in that the skin, which points towards the interior, of the frame (1) is in the form of a fixed panel (2), and a film (3) is used as the external skin.

Fig.1

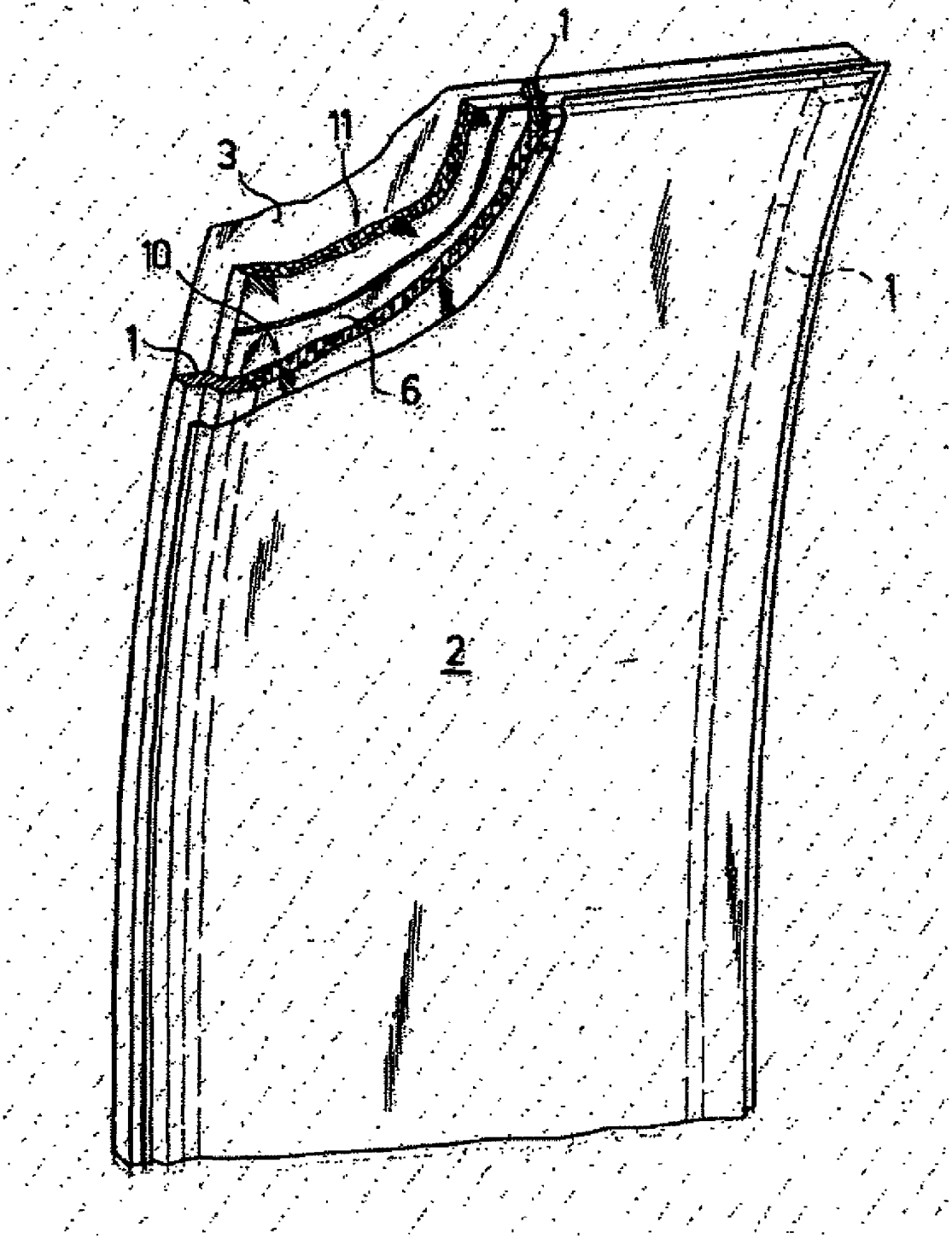

Fig. 2

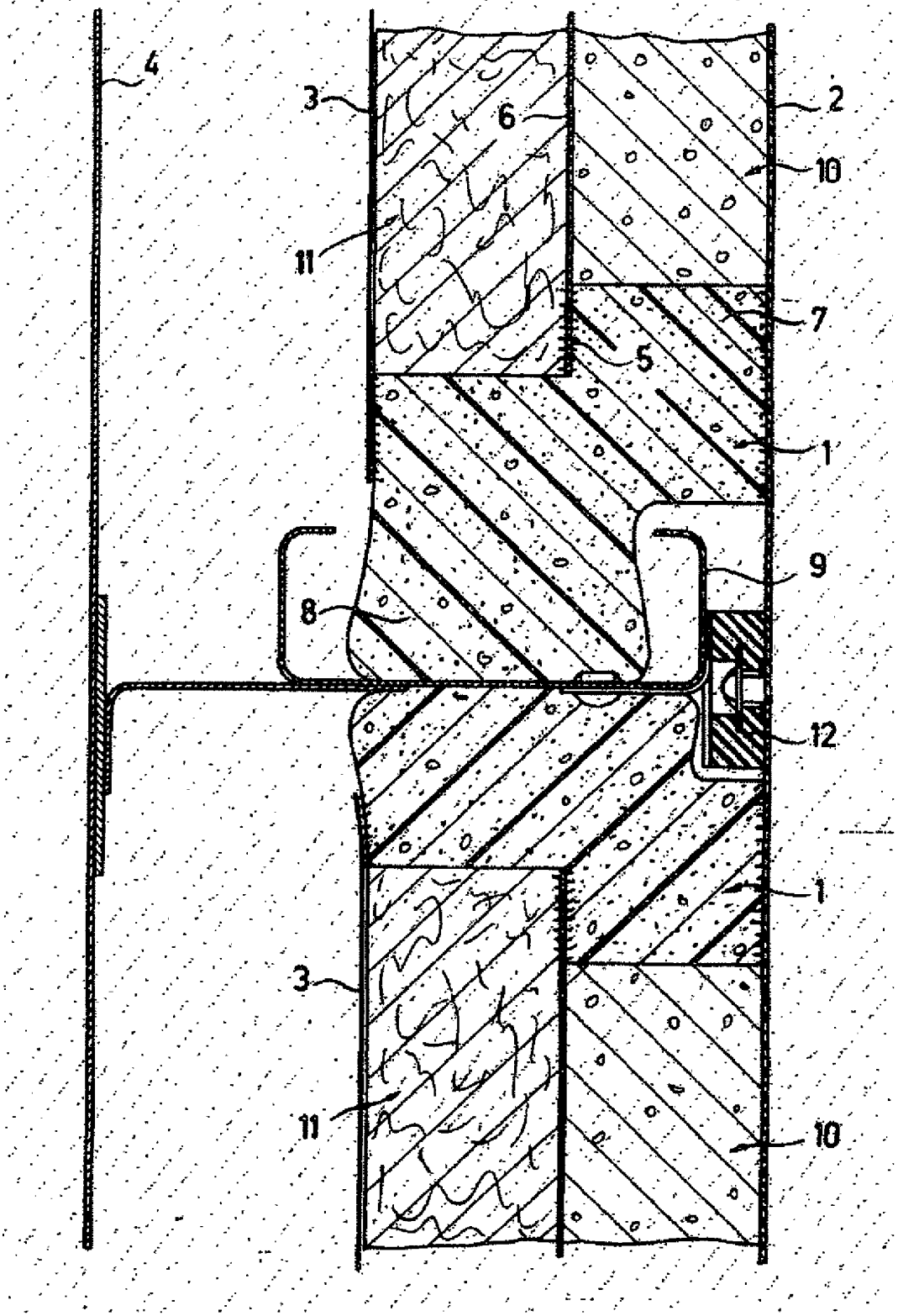

Fig.3